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CleanFUEL
PROPANE MOTORFUEL USA

Air Quality and Opportunities to Expand Alternative Transportation Fuels

Energy Commission / Air Resources Board

Stakeholders Workshop July 8, 2005

PROPANE MOTOR FUEL

Alternative Fuel Challenges

Industry Challenges

- Fuel Supply, Vehicle Availability, and Fuel Quality

Policy and Government Challenges

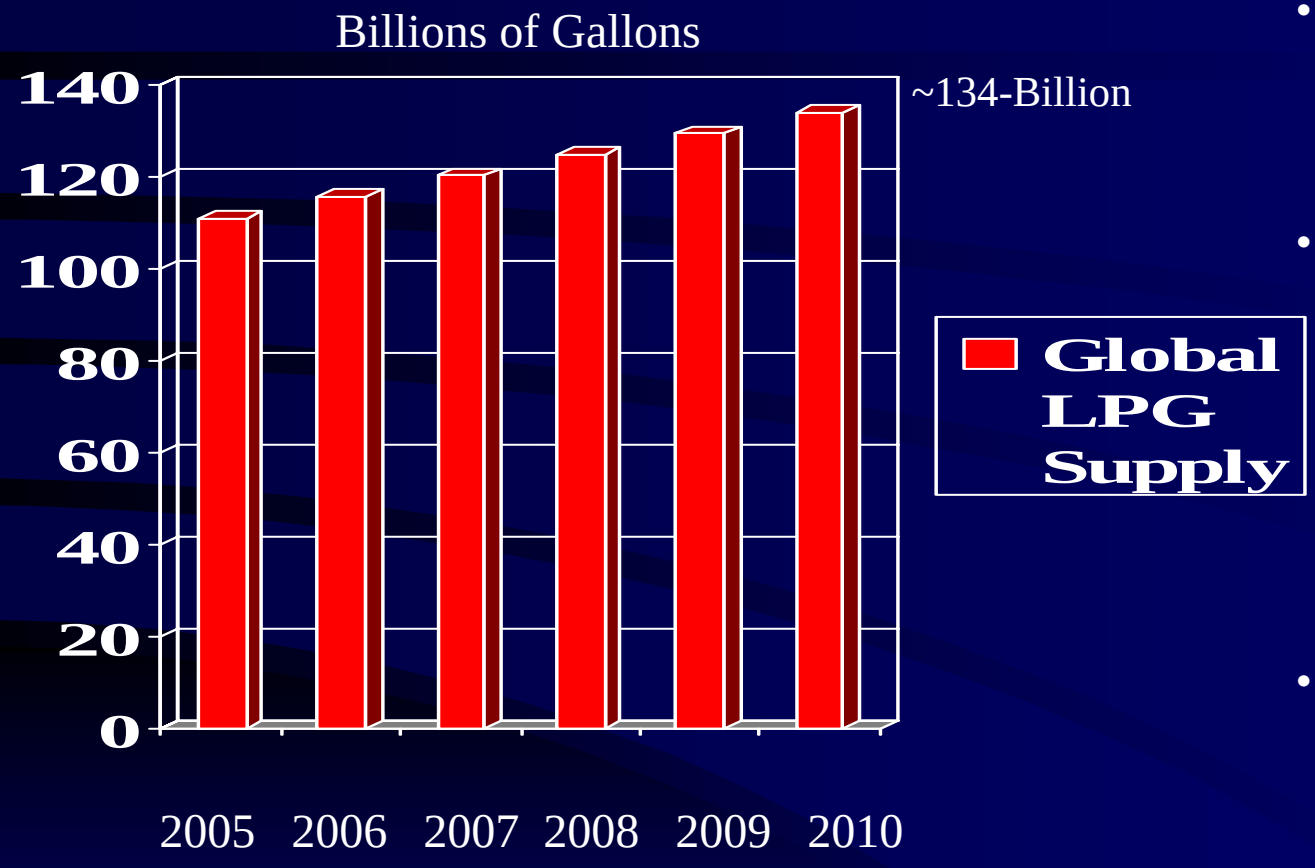
- Air Quality & Petroleum Reductions

- The Paradox of More Stringent Regulations

vs.

- The Future Deployment of Alternative fuel Technologies

LPG Global Supply and Demand



- Current Propane supply is growing at 2.8% per year.
- Supply trend is expected to continue for the next ten years due to increasing demands for natural gas and crude oil production worldwide.
- Global supply of Propane is growing faster than demand, which continues to soften Propane prices as they relate to crude oil & natural gas prices.

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Oil & Gas Journal

27 June, 2005

LPG Market Dynamics

- Global and Domestic supplies of propane are out pacing demands.
- Historically, propane has traded at 75% of crude oil pricing within global markets. Today, propane is trading at 60% of crude oil prices.
- Consequently, propane is expected to keep moving lower due to higher demands for crude oil and natural gas production.
- Currently, the United States and California export clean burning propane to Mexico and other markets due to the over supply of propane.

Benefit

- Market driven opportunities exist to develop propane motor fuel in California… and the propane industry is ready, willing an able to work with ARB and CEC to meet emission standards infrastructure needs.

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North American LPG Markets

- The United States is a “Global Clearinghouse” for excess propane supply around the world hosting the worlds largest underground storage capacity in the mid continent region.

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Refueling Infrastructure Projects

- CEC (29) Locations in California, ~$500,000
- 2002 SEP DOE Clean Cities Texas Cluster Project, $250,000
- 2003 SEP DOE Clean Cities Sacramento Cluster Project, $250,000
- 2004 SEP DOE Clean Cities Los Angeles Cluster , $250,000

-PENDING PROPOSALS-

- *“2005 SEP Clean Cities: East Bay, Western Riverside and Texas… $450,000*

Propane AFV Efficiency and Emissions

- Propane vehicles have similar range, MPG, and refueling times as gasoline.
- Propane Vehicles can meet current and future emission standards and are consistently cleaner than gasoline and diesel vehicles.
- Historically, propane fuel prices are 20 to 30% less than gasoline.
- Today, propane motor fuel is nearly 50% less than gasoline… and equal to diesel pricing
- on a DGE.

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Propane AFV Market

- Europe is converting 2,000 vehicles a day to propane.
- The Australian government is creating partnerships with vehicle and engine manufacturers to promote light, medium, and heavy duty propane vehicles.
- California and the United States have created market barriers that inhibit AFV production and deployment due to the high cost of certification, durability testing, warrantee accrual costs and recall liabilities.

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Certification Costs
Return on Investment

- Current Up-Fit Costs: $9,000 to $12,000
- EPA / ARB Certification Costs ~$500,000 and can be as high as $1-million
- With a Fuel Cost Savings of $0.60 a gallon, a vehicle would need to use 5,000 gallons per year, for 3-years just to cover a $9,000 Up-fit cost.
- In retrospect, Caltrans LPG trucks only use ~1,000 gallons a year.
- Lowering or offsetting the Cost of Certification is paramount if we are to build a sustainable AFV market.

Seven New California Propane Vehicle Platforms for 2005-2006

- Baytech's GM ¾-ton 2500-HD and 1-ton 3500-HD pick-up cab chassis w/8.1L engine.
- Baytech's GM Top-Kick and Kodiak medium duty and heavy duty trucks with GVW ranging from 17,000 to 37,000 lbs; C-4500, C-5500, C-6500, and C-7500 series w/8.1L engine.
- Baytech's GM 8.1L Propane up-fit is also available in the Workhorse step-van delivery platform.

* Fall 2005:

- GM ½-ton and ¾-ton pick-ups w/6.0L engine.

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Propane Industry Support

- In 2004 the Propane Education & Research Council (PERC) commissioned the Engine Fuel Coordinating Committee to create new engine fuel markets, create R&D projects, and promote the certification and deployment of propane powered vehicles and engine platforms.

PERC
2004-2005 RFP Opportunities

- Hino Heavy Duty Vehicle Project (8L diesel style engine)
- GM 8.1L Low-Floor Glacier Park Bus
- PERC / U.S. Department Clean Cities Grant Partnership Program RFP ($200,000) to develop new engine technologies.
- Current Research Projects: Emission Analysis Study & Report to Examine EPA and ARB emission standards and ERC banking programs.

2005-2006 Opportunities

- GM 6.0L Engine Development
- Air Port GSE & Ground Transportation
- Family 2 and Family 3 School Bus
- Public Transit Platforms

Industry Recommendations

- Support the 2005 Energy Bill now in conference to include “Clear Act” provisions for Alternative Fuel Credits, AFV, and Alt-Fuel Infrastructure Incentives.
- Create State Policies to leverage federal funding programs.
- Fund previous State AFV Mandates (2076 & 1170).
- Create an “AVF Support Program” for OEM and small vehicle manufacturers that would assist and help offset the costs associated with AFV Certification, **“the State needs to Invest in AFV Development.”**
- Creating a comprehensive State Alternative Fuels Support Program in collaboration with the CEC, ARB, and DGS that has line item funding in annual budget.

Propane Motor Fuel Summary

- Market trends favor propane fuel economics and supply distribution in the United States and California.
- Propane Fuel is less expensive than gasoline and is highly competitive with diesel fuel.
- The propane industry has initiated funding and support programs to advance propane vehicles.
- CEC & DOE funded propane infrastructure is able to facilitate substantial increases in vehicle deployment.
- The Propane Industry is poised to make significant inroads back into the motor fuel market.

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